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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Yukio Arima

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EXAMINER

RIZK, SAMIR WADIE

ART UNIT

PAPER NUMBER

2112

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/591,457	Applicant(s) ARIMA ET AL.	
	Examiner SAM RIZK	Art Unit 2112	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9/1/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTIONS

- Claims 1-7 have been submitted for examination
- Claims 1-7 have been rejected

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamamoto et al., A 500MHZ 50mW Viterbi Detector for DVD systems using simplified ACS and new path memory Architecture, 2002, Symposium on VLSI circuits digest of technical papers, 256-259. Copy provided. (Hereinafter Yamamoto)
2. In regard to claim 1, Yamamoto teaches:
 - An ACS circuit, which receives differential branch metrics (hereinafter referred to as "DBMs"), each of which is a difference between any two branches related to Viterbi decoding, (Figure 4, page 257 in Yamamoto) performs additions of the received DBMs to differential path metrics (hereinafter referred to as "DPMs"), each of which is a difference between any two states, and compares resultant DPMs obtained after the additions to select the most likely paths,(Figure 6, page 258 in Yamamoto) wherein of the DPMs, basic DPMs, each of which is a DPM

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between a path metric for a reference state and a path metric for another state, are retained and the most likely paths are selected according to the basic DPMs. (Section PSSMA , page 258 in Yamamoto).

3. In regard to claim 2, Yamamoto teaches:

- The ACS circuit of Claim 1, comprising:
- a basic DPM retaining section for retaining the basic DPMs;
- a basic DPM calculating section for calculating the basic DPMs;
- a reference DPM calculating section for calculating reference DPMs, which are DPMs other than the basic DPMs and necessary for the basic DPM calculation by the basic DPM calculating section;
- a basic DBM calculating section for calculating basic DBMs of the DBMs, the basic DBMs being necessary for the basic DPM calculation by the basic DPM calculating section; and
- (Figure 6 and section PSSMA (Path Selection Signal Memory Architecture, page 258 in Yamamoto).
- a path selecting section for selecting the most likely paths for the Viterbi decoding in accordance with the basic DPMs retained by the basic DPM retaining section, the reference DPMs calculated by the reference DPM calculating section, and the basic DBMs calculated by the basic DBM calculating section, wherein the basic DPM calculating section calculates new basic DPMs in accordance with the basic DPMs retained by the basic DPM retaining section, the reference DPMs calculated by the reference DPM calculating section, the

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basic DBMs calculated by the basic DBM calculating section, and results of the most likely path selection by the path

(Figures 4 & 6 and section PSSMA (Path Selection Signal Memory Architecture, page 258 in Yamamoto).

4. In regard to claim 3, Yamamoto teaches:

- The ACS circuit of Claim 2, wherein the basic DBM calculation by the basic DBM calculating section and the reference DPM calculation by the reference DPM calculating section are performed by parallel processing.

(Figures 4 and section ACS (add Compare select) page 256 in Yamamoto).

5. In regard to claim 4, Yamamoto teaches:

- The ACS circuit of Claim 2, wherein the reference DPM calculating section calculates each of the reference DPMs by subtracting one of the basic DPMs retained by the basic DPM retaining section from another.

(Figures 4 and section ACS (add Compare select) page 256 in Yamamoto).

6. In regard to claim 5, Yamamoto teaches:

- The ACS circuit of Claim 2, wherein the basic DPM calculating section selects basic DPMs and basic DBMs, from which the new basic DPMs are calculated, from the basic DPMs retained by the basic DPM retaining section, the reference DPMs calculated by the reference DPM calculating section, and the basic DBMs calculated by the basic DBM calculating section, in accordance with the results of the most likely path selection by the path selecting section, and

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performs additions of the selected basic DPMs and the selected basic DBMs, thereby calculating the new basic DPMs.

(Figures 4 and section ACS (add Compare select) page 256 in Yamamoto).

7. In regard to claim 6, Yamamoto teaches:

- The ACS circuit of Claim 2, wherein the basic DPM calculating section adds each of the basic DPMs retained by the basic DPM retaining section and the reference DPMs calculated by the reference DPM calculating section to each of the basic DBMs calculated by the basic DBM calculating section to thereby calculate candidates for the new basic DPMs and selects the new basic DPMs from the candidates in accordance with the results of the most likely path selection by the path selecting section.

(Figures 4 and section ACS (add Compare select) page 256 in Yamamoto).

8. In regard to claim 7, Yamamoto teaches:

- The ACS circuit of Claim 2, wherein the path selecting section assigns different path selection numbers to branches related to transitions to states in the Viterbi decoding and outputs, as the results of the most likely path selection, a path selection signal indicating one of the path selection numbers.

(Figures 4 and section ACS (add Compare select) page 256 in Yamamoto).

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
- Kojima US patent no. 5953383 teaches ACS circuit.
 - Okumura et al. US publication no. 2003/0043939 teaches differential metric ACS circuit.
 - Itakura et al. US patent no. 5410555 teaches ACS normalizing circuit

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sam Rizk whose telephone number is (571) 272-8191. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Scott Baderman can be reached on (571) 272-3644. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR

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only. For more information about PAIR system, see <http://pair-direct.uspto.gov>.

Should you have questions on access to the Private PAIR system, contact the Electronics Business Center (EBC) at 866-217-9197 (toll-free)

/Sam Rizk/

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